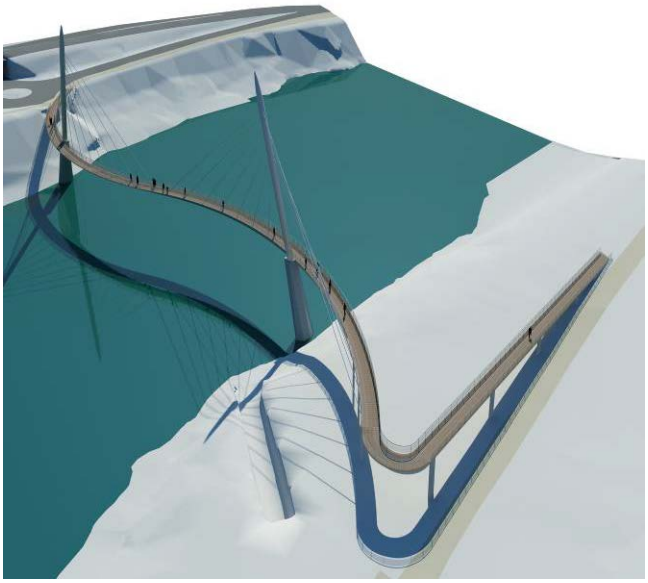
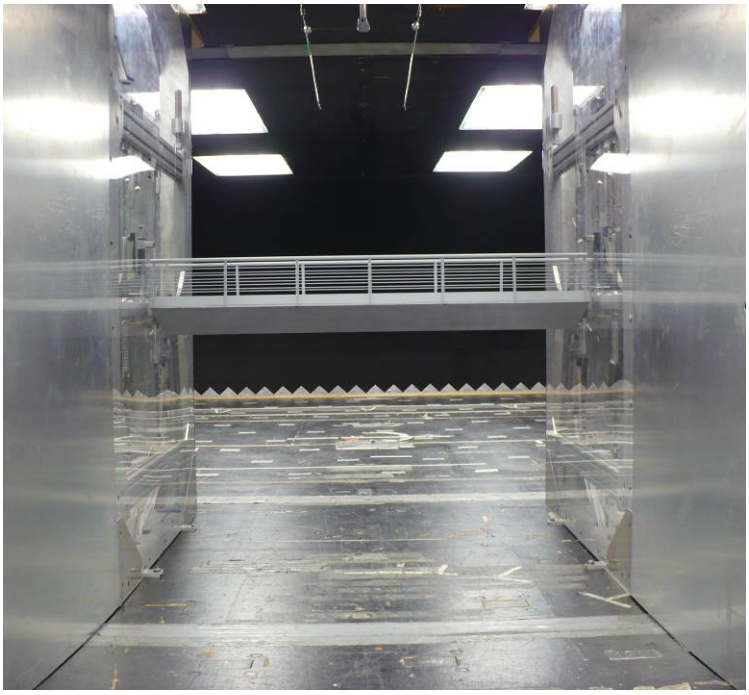
Oira Pedestrian Bridge, Ourense, Spain

Wind Engineering Study





Partner and Client Oritia & Boreas, Spain	*Span* Approximately 160 m	*Shipping Clearance* 12.5 m
Deck Width 3.12 m	*Year Tested* 2010	*Model Scale* Section Models: 1:10

The Project

The proposed Oira Pedestrian Bridge is located in the province of Ourense on the North-East end of the City of Ourense. The bridge carries pedestrians over the River Miño and is supported by means of stays from a set of two inclined 45m tall masts. The span measured at the foundation of the masts is 110m.

The full scale deck sections along the bridge have a uniform width of 3.12m and depth of 1.03m, but with different triangular soffit shapes. The bridge deck is designed with steel and concrete sections. The deck cross section has a symmetric soffit at the midspan, but has varying triangular soffit on each side of the bridge centreline. The geometry of the deck in plan view is curved as an "S" with a radius of 80m. The stays are anchored from the inner side of the curve in the deck.

The Wind Tunnel Studies

The wind engineering studies for the Oira Pedestrian Bridge included an analysis of the site wind climate and section model investigations for three representative deck sections. A companion study was also performed to provide estimates of aerodynamic derivatives. The aim of the section model study was:

a) to provide basic aerodynamic information to confirm the deck section design;

b) to investigate the overall stability of the deck sections in high wind conditions

c) to define the behaviour of the deck due to buffeting in turbulent wind;

d) to develop the equivalent static loads to assist in the design of the bridge deck.

The Boundary Layer Wind Tunnel Laboratory

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